

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Withdrawn): A structure editing apparatus wherein an appropriate data range in arranged data is defined as a segment and, when the data range defined by one segment is expressed by a group of a plurality of other segments, said group of the plurality of other segments is defined as a package, thereby editing a structure of said arranged data using structure information defining a hierarchical structure of said arranged data, said structure editing apparatus comprising:

first designating unit which designates an arbitrary segment in said structure information as a target segment;

second designating unit which designates an arbitrary position included in a range of said target segment; and

segment dividing unit which divides the range of said target segment into a first half segment and a second half segment at a dividing position, the dividing position being said position designated by said second designating unit.

Claim 2 (Withdrawn): A structure editing apparatus according to claim 1, wherein when said target segment has a package, said segment dividing unit divides the package into a first half package consisting of a segment corresponding to a range of said first half segment and a second half package consisting of a segment corresponding to a range of said second half segment.

Claim 3 (Withdrawn): A structure editing apparatus according to claim 1, wherein said first designating unit is constituted out of a display unit displaying said structure information and a pointing device for designating the target segment, and said second

designating unit is constituted out of the display unit displaying said structure information and a pointing device for designating said dividing position; and

said second designating unit displays a line segment for indicating the dividing position on said target segment displayed and freely translating a position of the line segment using the pointing device of said second designating unit.

Claim 4 (Withdrawn): A structure editing apparatus according to claim 1, comprising:

third designating unit which designates movement of one of a boundary on a side of a start position of said target segment and a boundary on a side of an end position of said target segment when an end position of a segment right before said target segment is equal to the start position of the target segment and the end position of the target segment is equal to a start position of a segment right after the target segment; and

segment boundary moving unit which moves the designated boundary on one of the sides of the start position and the end position with said position designated by said second designating unit set as a moving position when said third designating unit designates the movement of the boundary.

Claim 5 (Withdrawn): A structure editing apparatus according to claim 4, wherein when said boundary is to be moved, said segment boundary moving unit can select one of three boundary movement processings, the three boundary movement processings being:

a first boundary movement processing for moving only one of the start position and the end position of said target segment without changing one of the start position of the

segment right after the target segment and the end position of the segment right before the target segment;

a second boundary movement processing for moving one of the start position and the end position of said target segment, and moving one of the end position of the segment right before the target segment and the start position of the segment right after the target segment in contact with one of the start position and the end position of said target segment; and

a third boundary movement processing for moving only one of the start position and the end position of said target segment without moving one of the start position of the segment right after the target segment and the end position of the segment right before the target segment, and inserting a new segment to fill a generated clearance.

Claim 6 (Withdrawn): A structure editing apparatus according to claim 5, wherein when said target segment has a package, said segment boundary moving unit moves a boundary of a segment in the package in accordance with the range of the target segment.

Claim 7 (Withdrawn): A structure editing apparatus according to claim 6, wherein said second designating unit displays a line segment for indicating the moving position on said target segment displayed, and freely translating a position of the line segment using the pointing device.

Claim 8 (Withdrawn): A structure editing apparatus according to claim 1, wherein when said target segment has a structural element below a package in a lower hierarchy, one of a first cutting processing for deleting a structural element below a segment to be cut, a second cutting processing for dividing the segment to be cut, and a third cutting processing for dividing the segment to be cut and then merging divided segment parts with

two segments adjacent the divided segment is selectable as a processing for cutting a descendent segment by one of said segment dividing unit and said segment boundary moving unit, respectively, the first cutting processing, the second cutting processing and the third cutting processing recursively applied up to an end descendant.

Claim 9 (Withdrawn): A structure editing apparatus according to claim 1, further comprising:

fourth designating unit which designates segment merger; and  
segment merging unit which merges a plurality of segments and replacing the plurality of segment by one segment, wherein

said first designating unit can designate a plurality of adjacent segments in a same package as target segments; and

when said first designating unit designates the plurality of target segments and said fourth designating unit designates the segment merger, then said segment merging unit merges the designated plurality of target segments and replaces a start position of a first segment to an end position of an end segment on basis of time series by one segment.

Claim 10 (Withdrawn): A structure editing apparatus according to claim 1, further comprising:

fifth designating unit which designates an arbitrary package in said structure information as a target package; and

a package hierarchy upgrading unit which replaces a segment above said target package by all segments serving as structural elements of said target package and upgrading said target package by one hierarchy when said fifth designating unit designates the target package.

Claim 11 (Withdrawn): A structure editing apparatus according to claim 1, further comprising:

sixth designating unit which designates segment hierarchy downgrading; and  
a segment hierarchy downgrading unit which creates a new package and a new segment out of a plurality of segments, arranging said new segment in place of said plurality of segments, and arranging said new package in a hierarchy below said new segment, wherein

said first designating unit can designate a plurality of adjacent segments in a same package as target segments;

when said first designating unit designates the plurality of target segments and said sixth designating unit designates the segment hierarchy downgrading, then said segment hierarchy downgrading unit creates, as said new segment, a segment in a range corresponding to a combined range of said plurality of target segments, replaces said plurality of target segment by the new segment, creates the new package below the new segment, and moves said plurality of target segments below the new package.

Claim 12 (Withdrawn): A structure editing apparatus according to claim 1, further comprising:

seventh designating unit which designates segment hierarchy upgrading; and  
segment hierarchy upgrading unit which moves a plurality of segments to a hierarchy of a segment higher than the plurality of segments by one hierarchy, wherein

said first designating unit can designate a plurality of adjacent segments in a same package as target segments; and

when said first designating unit designates the plurality of target segments and said seventh unit designates the segment hierarchy upgrading, then said segment hierarchy upgrading unit sets a segment above a package including said plurality of target segments as a parent segment, divides said parent segment into a new segment in a range corresponding to a combined range of said plurality of target segments and other segments, and replaces said plurality of target segments by said new segment.

Claim 13 (Withdrawn): A structure editing apparatus according to claim 1, further comprising:

    eighth designating unit which designates segment deletion; and  
    segment deleting unit which deletes a structural element below said target segment when said eighth designating unit designates the segment deletion.

Claim 14 (Withdrawn): A structure editing apparatus according to claim 13, wherein as a processing for a clearance generated after said segment deleting unit deletes the structural element below the target segment, one of no post-processing, a first processing for extending a boundary of a segment right before the target segment, a second processing for extending a boundary of a segment right after the target segment, and a fourth processing for designating one point in a range of the target segment and extending the boundaries of the segments right before and after the target segment toward respective designated positions is selectable.

Claim 15 (Withdrawn): A structure editing apparatus according to claim 10, further comprising:

    ninth designating unit which designates package deletion; and

package deleting unit which deletes a structural element below the target package when said fifth designating unit designates the target package and said ninth designating unit designates the package deletion.

Claim 16 (Withdrawn): A structure editing apparatus according to claim 1, wherein said arranged data is a picture stream.

Claim 17 (Withdrawn): A picture structure editing apparatus wherein an arbitrary frame range in a picture stream is defined as a segment, and when the range designated by one segment is expressed by a group of a plurality of other segments, the group of said plurality of segments is defined as a package, thereby editing a structure of said picture stream using structure information defining a hierarchical structure of said picture stream, the picture structure editing apparatus comprising:

first designating unit which designates an arbitrary segment in said structure information as a target segment;

second designating unit which designates an arbitrary position included in a range of said target segment; and

segment dividing unit which divides the range of said target segment into a first half segment and a second half segment at a dividing position, the dividing position being said position designated by said second designating unit.

Claim 18 (Withdrawn): A picture structure editing apparatus according to claim 17, wherein

when said target segment has a package, said segment dividing unit divides the package into a first half package consisting of a segment corresponding to a range of said first

half segment and a second half package consisting of a segment corresponding to a range of said second half segment.

Claim 19 (Withdrawn): A structure editing apparatus according to claim 17, wherein said first designating unit is constituted out of a display unit displaying said structure information and a pointing device for designating the target segment, and said second designating unit is constituted out of the display unit displaying said structure information and a pointing device for designating said dividing position; and

said second designating unit displays a line segment for indicating a dividing position on said target segment displayed and freely translating a position of the line segment using the pointing device of said second designating unit.

Claim 20 (Withdrawn): A picture structure editing apparatus according to claim 19, wherein

when said dividing position is in units of frames, a segment start frame A, a segment end frame B, a division target candidate frame C and a frame D right before the division target candidate frame C are arranged in an order of the frame A, the frame D, the frame C and the frame B and displayed together with the number of frames on an operation dialog.

Claim 21 (Withdrawn): A picture structure editing apparatus according to claim 20, wherein

when one of the segment division and the segment boundary movement is conducted through one of said segment dividing unit and said segment boundary moving unit, respectively, it is possible to select one of updating only when an update button is depressed

and updating at set update timing to display updating of the respective frames displayed on said operation dialog.

Claim 22 (Withdrawn): A picture structure editing apparatus according to claim 21, wherein

a reproduction button and a frame candidate select button are provided;

when said reproduction button is depressed, the target segment at a time of depression of said reproduction button is reproduced; and

when said frame candidate select button is depressed, peripheries of a candidate frame designated at a time of depression of said frame candidate select button are displayed on a frame continuous display screen.

Claim 23 (Withdrawn): A picture structure editing apparatus according to claim 17, comprising:

third designating unit which designates movement of one of a boundary on a side of a start position of said target segment and a boundary on a side of an end position of said target segment when an end position of a segment right before said target segment is equal to the start position of the target segment and the end position of the target segment is equal to a start position of a segment right after the target segment; and

segment boundary moving unit which moves the designated boundary on one of the sides of the start position and the end position with said position designated by said second designating unit set as a moving position when said third designating unit designates the movement of the boundary.

Claim 24 (Withdrawn): A picture structure editing apparatus according to claim 23,  
wherein

when said boundary is to be moved, said segment boundary moving unit can select one of three boundary movement processings, the three boundary movement processings being:

a first boundary movement processing for moving only one of the start position and the end position of said target segment without changing one of the start position of the segment right after the target segment and the end position of the segment right before the target segment;

a second boundary movement processing for moving one of the start position and the end position of said target segment, and moving one of the end position of the segment right before the target segment and the start position of the segment right after the target segment in contact with one of the start position and the end position of said target segment; and

a third boundary movement processing for moving only one of the start position and the end position of said target segment without moving one of the start position of the segment right after the target segment and the end position of the segment right before the target segment, and inserting a new segment to fill a generated clearance.

Claim 25 (Withdrawn): A picture structure editing apparatus according to claim 24,  
wherein

when said target segment has a package, said segment boundary moving unit moves a boundary of a segment in the package in accordance with the range of the target segment.

Claim 26 (Withdrawn): A picture structure editing apparatus according to claim 17,  
wherein

said second designating unit displays a line segment for indicating the moving position on said target segment displayed, and freely translating a position of the line segment using the pointing device.

Claim 27 (Withdrawn): A picture structure editing apparatus according to claim 26, wherein

when said moving position is in units of frames, a start frame A of a segment right before the target segment, an end frame B of the segment right before the target segment, a start frame C of the target segment, an end frame D of the target segment, a start frame E of a segment right after the target segment and an end frame F of the segment right after the target segment are displayed together with the number of frames on an operation dialog.

Claim 28 (Withdrawn): A picture structure editing apparatus according to claim 26, wherein

when one of the segment division and the segment boundary movement is conducted through one of said segment dividing unit and said segment boundary moving unit, respectively, it is possible to select one of updating only when an update button is depressed and updating at set update timing to display updating of the respective frames displayed on said operation dialog.

Claim 29 (Withdrawn): A picture structure editing apparatus according to claim 28, wherein

a reproduction button and a frame candidate select button are provided;

when said reproduction button is depressed, the target segment at a time of depression of said reproduction button is reproduced; and

when said frame candidate select button is depressed, peripheries of a candidate frame designated at a time of depression of said frame candidate select button are displayed on a frame continuous display screen.

Claim 30 (Withdrawn): A computer program for allowing a computer to execute respective unit of a picture structure editing apparatus wherein an appropriate data range in arranged data is defined as a segment and, when the data range defined by one segment is expressed by a group of a plurality of other segments, said group of the plurality of other segments is defined as a package, thereby editing a structure of said arranged data using structure information defining a hierarchical structure of said arranged data, said structure editing apparatus comprising:

first designating unit which designates an arbitrary segment in said structure information as a target segment;

second designating unit which designates an arbitrary position included in a range of said target segment; and

segment dividing unit which divides the range of said target segment into a first half segment and a second half segment at a dividing position, the dividing position being said position designated by said second designating unit.

Claim 31 (Withdrawn): A computer program for allowing a computer to execute respective unit of a picture structure editing apparatus wherein an arbitrary frame range in a picture stream is defined as a segment, and when the range designated by one segment is expressed by a group of a plurality of other segments, the group of said plurality of segments is defined as a package, thereby editing a structure of said picture stream using structure

information defining a hierarchical structure of said picture stream, the picture structure editing apparatus comprising:

first designating unit which designates an arbitrary segment in said structure information as a target segment;

second designating unit which designates an arbitrary position included in a range of said target segment; and

segment dividing unit which divides the range of said target segment into a first half segment and a second half segment at a dividing position, the dividing position being said position designated by said second designating unit.

Claim 32 (Currently Amended): An object content structure management method for managing a content structure of a root object, wherein said root object includes attribute data corresponding to a media file, comprising:

expressing the content structure of said root object by a tree-structure set membership consisting of ~~zero~~ one or more objects, said ~~zero~~ one or more objects comprising ~~zero~~ one or more parent objects and ~~zero~~ one or more child objects, each child object respectively corresponding to one of said ~~zero~~ one or more parent objects;

defining an attribute capable of being held by said parent and child objects for each of a plurality of object types and each of the plurality of object types by a schema definition;

managing a list of child objects capable of being held by said root object and defined by said schema definition; and

sequentially managing a list of first child objects of one of said ~~zero~~ one or more parent objects as a start object, a list of the first child objects of each start object held by the list of the first child objects, and a second list of child objects of each first child object held

by a second list of child objects of the first child objects, thereby managing a content structure of said start object, wherein:

said first and second lists of child objects hold instances of all objects actually existing as said child objects and placeholders indicating objects that can exist as said child objects;

each child object holds determination information for determining whether a certain object is an instance of an actually existing child object or a placeholder indicating an object that can exist as a child object.

Claim 33 (Previously Presented): An object content structure management method according to claim 32, wherein:

said placeholders indicate objects that can exist as said child objects and are managed one by one for each object of a same type.

Claim 34 (Previously Presented): An object content structure management method according to claim 32, further comprising:

managing a plurality of objects including an exclusively selectable object that is capable of being held by a certain parent object by a schema definition of said parent object as a choice list besides said list of child objects;

managing an object selected from among a plurality of choices by a list of child objects of a parent object and managing objects other than said selected object of the choices as said placeholders indicating objects that can exist as child objects in the choice list of said selected object.

Claim 35 (Currently Amended): An object content structure display method for displaying a content structure of a root object, wherein said root object includes attribute data corresponding to a media file, comprising:

expressing the content structure of said object by a tree-structure set membership consisting of ~~zero~~ one or more objects, said ~~zero~~ one or more objects comprising ~~zero~~ one or more parent objects and ~~zero~~ one or more child objects, each child object respectively corresponding to one of said ~~zero~~ one or more parent objects;

defining an attribute capable of being held by said parent and child objects for each of a plurality of object types and a type of said object by a schema definition, wherein:

objects held by said root object as child objects are expressed by a tree structure;

a character string representing the object type is displayed on each node of the tree structure to display a structure of the object; and

a type and a value of the attribute capable of being held by an object selected from the displayed tree structure are displayed ~~thereby displaying a content and a structure of the selected object.~~

Claim 36 (Previously Presented): An object content structure display method according to claim 35, wherein:

not only instance objects actually held by the root object, but also placeholders indicating objects that can be held based on the schema definition, are simultaneously displayed in the tree structure one by one for each object type; and

the instance objects and the objects other than the instance objects are discriminated by different icons and then displayed.

Claim 37 (Previously Presented): An object content structure display method according to claim 35, wherein:

said tree structure is expressed hierarchically for objects to be held by said root object serving as a root configured to further hold objects; and

structures below the actually existing instance objects are displayed up to a hierarchical level designated at a time of hierarchically displaying said tree structure and display of structures below the designated hierarchical level is omitted.

Claim 38 (Previously Presented): An object content structure display method according to claim 35, wherein:

any one of a plurality of types of objects may be held under a schema definition of types of child objects capable of being held by the root object;

all objects of choices are displayed in a tree structure as child nodes and the objects actually selected and held among the choices and the unselected choices are discriminated from each other by different icons and then displayed.

Claim 39 (Canceled).

Claim 40 (Previously Presented): An object content structure display method according to claim 35, wherein:

a plurality of child objects of a same type may be held under a schema definition of types of the child objects capable of held by the root object; and

one of a maximum number and a minimum number of the child objects capable of being held are displayed in said tree structure.

Claim 41 (Currently Amended): An object content structure editing method for editing a content structure of a root object, wherein said root object includes attribute data corresponding to a media file, comprising:

expressing the content structure of said object by a tree-structure set membership consisting of ~~zero~~ one or more objects, said ~~zero~~ one or more objects comprising ~~zero~~ one or more parent objects and ~~zero~~ one or more child objects, each child object respectively corresponding to one of said ~~zero~~ one or more parent objects;

defining an attribute capable of being held by said parents and child objects for each of a plurality of object types and a type of said object by a schema definition, wherein[[:] objects held by said parent object as child objects are expressed by a tree structure;

a character string representing the object type is displayed on each node of the tree structure to display a structure of the object;

a type and a value of an attribute capable of being held by an object selected from the displayed tree structure are displayed ~~thereby displaying a content and a structure of the selected object;~~ and

a value to be changed is inputted and a change is indicated for said displayed attribute value, and the attribute value of the object is updated to the input value.

Claim 42 (Original): An object content structure editing apparatus according to claim 41, wherein:

an instance addition is indicated after one of the objects existing in the tree structure is designated; and

an instance object of the same type as a type of the designated object is created and the object of the same type is displayed as a fraternal node of said designated object in the tree structure.

Claim 43 (Original): An object content structure editing method according to claim 42, wherein:

an object permitted to be held as a plural by the schema definition is discriminated from an object prohibited from being held as a plural by the schema definition using different display colors or different icons prior to being displayed; and

instance addition indication is not accepted in cases of objects prohibited from being held as a plural.

Claim 44 (Previously Presented): An object content structure editing method according to claim 41, wherein:

an addition is indicated after designating one dummy object indicating types of objects which do not actually exist but can be held;

said designated dummy object is changed to an actual instance; and

an icon of said designated dummy object is changed to an icon indicating the actual instance in the tree structure.

Claim 45 (Previously Presented): An object content structure editing method according to claim 44, wherein:

not only said designated dummy object but also ancestor objects of said designated dummy object are dummy objects; and

the ancestor objects are sequentially changed to instances.

Claim 46 (Currently Amended): An object content structure editing method according to claim 41, wherein:

a deletion is indicated after designating the ~~actually existing~~ object selected from the displayed tree structure

said designated object is held as a plural;

structures below the objects are deleted and display of the objects is deleted from the tree structure;

the deletion is indicated after designating the actually existing object and

said designated object is a single object; and

nodes below the designated object are changed to dummy objects and display icons of the nodes in the tree structure are changed.

Claim 47 (Previously Presented): An object content structure editing method according to claim 41, wherein:

a selection change is indicated after one of dummy objects indicating unselected choices is designated; and

the objects selected before the selection change are changed to the objects indicating choices and said designated object is changed to a selected object.

Claim 48 (Previously Presented): An object content structure editing method according to claim 41, wherein:

edited object contents are outputted by a description language, the description language being an MPEG-7 description language or an XML description language.

Claim 49 (Currently Amended): A computer program for allowing a computer to execute an object content structure management method for managing a content structure of a

root object, wherein said root object includes attribute data corresponding to a media file, comprising:

expressing the content structure of the root object by a tree-structure set membership consisting of ~~zero~~ one or more objects, said ~~zero~~ one or more objects comprising ~~zero~~ one or more parent objects and ~~zero~~ one or more child objects, each child object respectively corresponding to one of said ~~zero~~ one or more parent objects

defining an attribute capable of being held by the parent and child objects for each of a plurality of object types and the object type by a schema definition;

managing a list of child objects capable of being held by said ~~zero~~ one or more parent objects and defined by said schema definition for each said child object;

sequentially managing a list of first child objects of one of said ~~zero~~ one or more parent objects as a start object, a list of the first child objects of each start object held by the list of the first child objects, and a second list of child objects of each first child object held by a second list of child objects of the first child objects thereby managing a content structure of said start object, wherein:

the first and second lists of said child objects hold instances of all objects actually existing as the child objects and placeholders indicating objects that can exist as the child objects, and each child object holds determination information for determining whether a certain object is an instance of an actually existing object or a placeholder indicating an object that can exist as a child object.

Claim 50 (Currently Amended): A computer program for allowing a computer to execute an object content structure display method for displaying a content structure of a root object, wherein said root object includes attribute data corresponding to a media file, comprising:

expressing the content structure of the object by a tree-structure set membership consisting of ~~zero~~ one or more objects, said ~~zero~~ one or more objects comprising ~~zero~~ one or more parent objects and ~~zero~~ one or more child objects, each child object respectively corresponding to one of said ~~zero~~ one or more parent objects;

defining an attribute capable of being held by the parent and child objects for each of a plurality of object types and the object type by a schema definition;

expressing objects held by said root object as child objects by a tree structure;

displaying a character string representing the object type on each node of the tree structure to display a structure of the object;

displaying a type and a value of the attribute capable of being held by an object selected from the displayed tree structure ~~thereby displaying a content and a structure of the selected object.~~

Claim 51 (Currently Amended): A computer program for allowing a computer to execute an object content structure editing method for editing a content structure of a root object, wherein said root object corresponds to attribute data of a media file, comprising:

expressing the content structure of the root object by a tree-structure set membership consisting of ~~zero~~ one or more objects, said ~~zero~~ one or more objects comprising ~~zero~~ one or more parent objects and ~~zero~~ one or more child objects, each child object respectively corresponding to one of said ~~zero~~ one or more parent objects;

defining an attribute capable of being held by the parent and child objects for each of a plurality of object types and the object type by a schema definition;

expressing the child objects held by said root object as child objects by a tree structure;

displaying a character string representing the object type on each node of the tree structure to display a structure of the root object;

displaying a type and a value of an attribute held by the root object selected from the displayed tree structure thereby displaying a content and a structure of the selected object, wherein:

a value to be changed is inputted, and a change is indicated for said displayed attribute value; and the attribute value of the selected object is updated to the input value.

Claim 52 (Withdrawn): A content management method capable of managing one content by a plurality of data formats, wherein

data of an original content consisting of one or a plurality of files and a plurality of items of data expressed in a data format different from a data format of the data of the original content are integrated into one logical content and collectively managed.

Claim 53 (Withdrawn): A content management method according to claim 52, wherein

when a content is one of picture data and voice data, then the files of the original contents, a file in a data format suited for a processing or a file registered in response to a user's request are collectively managed.

Claim 54 (Withdrawn): A content management method according to claim 53, wherein

after registering the original contents, a file in a data format suited for a processing requested in response to a processing request for specifying a logical content is created or

files in a plurality of data formats assumed in advance are automatically created at free timing.

Claim 55 (Withdrawn): A content management method according to claim 53, wherein said processing is one of a data editing operation, a content description operation and a delivery operation.

Claim 56 (Withdrawn): A content management method according to claim 55, wherein  
after registering the original contents, a file in a data format suited for a processing requested in response to a processing request for specifying a logical content is created or files in a plurality of data formats assumed in advance are automatically created at free timing.

Claim 57 (Withdrawn): A content management method according to claim 52, wherein  
when the original contents are constituted out of a plurality of items of data, management information for managing an allocation position and an allocation length of each data for allocating each data to the logical content consisting of the plurality of items of data of the original content is provided, the management information as well as the files being collectively managed.

Claim 58 (Withdrawn): A content management method according to claim 57, wherein

each data of the original content constituting said logical content is a part of one file or has an overlapped content between the data of the original content.

Claim 59 (Withdrawn): A content management method according to claim 52, wherein an attribute of a content is described as content description information indicating the content.

Claim 60 (Withdrawn): A content management method according to claim 59, wherein the content description information has a logical structure.

Claim 61 (Withdrawn): A content management method according to claim 52, wherein the content description information indicating the content is included as data to be collectively managed.

Claim 62 (Withdrawn): A content management method according to claim 52, wherein the content description information having a logical structure is included as data to be collectively managed.

Claim 63 (Withdrawn): A computer program for executing a content management method capable of managing one content by a plurality of data formats, wherein

data of an original content consisting of one or a plurality of files and a plurality of items of data expressed in a data format different from a data format of the data of the original content are integrated into one logical content and collectively managed.